

PATENT SPECIFICATION

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- (21) Application No. 35133/76 (22) Filed 24 Aug. 1976
 (23) Complete Specification filed 6 July 1977
 (44) Complete Specification published 6 Aug. 1980
 (51) INT CL³ C08L 83/04/23/08 25/06 27/06 31/04 33/04
 (52) Index at acceptance
 C3M 103 152 153 158 162 170 200 XA
 C3T 6F2 6H1 6H3 6H4E 6H4X
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(54) IMPROVEMENTS IN GROUT PREPARATIONS

(71) We, BUILDING ADHESIVES LIMITED, a British Company of Longton Road, Trentham, Stoke-on-Trent, ST4 8JB, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed to be particularly described in and by the following statement:—

This invention is concerned with grout preparations based on synthetic polymer emulsions for use with grout lines in the fixing of ceramic tiles, said preparations including coating compositions for use in the improvements of existing grout lines between ceramic tiles or for use as a ready mixed grouting composition in the setting of ceramic tiles.

Coating compositions or grouting compositions based on synthetic polymer emulsions when used with ceramic tiling present a problem arising from the adhesion of such emulsions to the glazed surface of the tiling. The excess material of the composition, whether applied as a coating to existing grout lines or applied as a ready mixed grout between tiles, is very difficult to remove from the glazed surface once the composition has dried.

It is an object of the present invention to provide a grouting preparation, based on synthetic polymer emulsions, which when applied over a glazed tile surface can readily be removed therefrom after drying merely by rubbing with a dry cloth.

According to the invention there is provided a grouting preparation for use in the improvement or repairing of existing grout lines between ceramic tiles or for use as a ready mixed grouting composition in the setting of ceramic tiles comprising an aqueous emulsion of a synthetic polymer having incorporated therein between 10 and 40% by weight based on polymer solids of a silicone oil, a filler and a pigment.

The said grouting preparations will preferably include also other minor additives customary in grouting compositions for example, thickeners, fungicides, and dispersing agents.

The silicone oil is incorporated in the

polymer emulsion prior to compounding with the fillers, pigment and other additives. Silicone oil may be emulsified by the addition of various surfactant systems and these emulsions are freely miscible with polymer emulsions providing the surfactant systems of the polymer emulsion and the silicone oil emulsion are not incompatible. In some cases a silicone oil can be dispersed directly into the polymer emulsion.

In the polymer/silicone oil dispersions used in the compositions of the invention proportions of silicone oils of between 10% and 40% by weight of the polymer solids are used. Suitable silicone oils are dimethyl silicone or dimethyl polysiloxane.

The polymer emulsions particularly suitable for use in the present invention are emulsions of vinyl and acrylic polymers or copolymers.

The preparations in accordance with the present invention can as stated be used either as a coating composition for application to existing grout lines to repair and/or improve the appearance of the latter or as a ready-mixed grouting composition. The difference between the preparations will largely be one of consistency, coating compositions being of a paint-like consistency and the grouting compositions being of a thick-paste consistency. This will reflect a lower polymer content and higher filler content of the grouting composition in relation to a coating composition.

Examples of grout compositions in accordance with the invention are as follows:—

Example 1

A grout coating composition is prepared as follows:—

100 parts by weight of "Vinamul" 3252 ("Vinamul" is a Registered Trade Mark), a copolymer emulsion of vinyl acetate with ethylene and vinyl chloride of 55% by weight solids content, and 10 parts by weight of Silicone F 111/1000, a dimethyl silicone oil having nominal viscosity of 1000 centistokes at 25°C, were stirred until

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homogeneous and separation of the silicone oil did not occur on standing. This silicone oil was dispersed directly into the polymer emulsion without the necessity for previous addition of another surfactant.

Using this polymer/silicone oil dispersion the following formulation for the grout coating composition was obtained by blending the dispersion and other components in a high speed mixer.

Water	37.96%
Pigment Dispersant	2.73%
Ground Limestone	33.66%
Titanium Dioxide	5.16%
Polymer/Silicone Oil Dispersion	20.24%
Hydroxymethyl Cellulose	0.20%
Fungicide	0.05%

The percentages are by weight.

Example 2

A grout coating composition is prepared as follows:—

100 parts by weight of "Vinacryl" 7172 ("Vinacryl" is a Registered Trade Mark), a styrene-acrylic copolymer emulsion of 49—51% by weight solids, and 20 parts by weight of Silicone Emulsion M400 were simply stirred together for 5 minutes, the mixture being stable and showing no tendency to separate. (Silicone Emulsion M400 is a 35% aqueous emulsion of dimethyl polysiloxane containing a blend of ethoxylated nonyl phenols/nonylpolyethylene glycol ethers and an alkyl aryl polyether sulphate as emulsifiers).

The above polymer/silicone oil dispersion was then blended with other components to provide the formation as follows:—

Water	27.40%
Pigment Dispersant Solution	2.99%
Ground Limestone	32.38%
Titanium Dioxide	5.98%
Polymer/Silicone Oil Dispersion	29.90%
Hydroxymethyl Cellulose	0.30%
Fungicide	0.05%
DC 772 Water Repellent	1.00%

The percentages are by weight.

Example 3

A ready-mixed grouting composition was prepared using a polymer/silicone oil dispersion from "Vinamul" 3240 (a polymer emulsion of vinyl acetate with ethylene and vinyl chloride of 50% by weight solids content) containing 5% by weight of added silicone oil F 111/1000. The formation was as follows:—

Pigment Dispersant Solution	10.14%
DC 772 Water Repellent	1.45%
Ethylene Glycol	3.62%
Ground China Clay	1.45%
Polymer/Silicone Oil Dispersion	14.50%
Filler and Pigment	68.84%

The pigment dispersant solution referred to in the above examples is an aqueous solution containing, by weight, 5% sodium metaphosphate and 5% Pigment Disperser A, an acrylic-type material manufactured by Badische-Anilin Soda Fabrik A.G.

DC 772 water repellent is a water-soluble methyl silicate solution.

WHAT WE CLAIM IS:—

1. A grouting preparation for use in the improvement or repairing of existing grout lines between ceramic tiles or for use as a ready mixed grouting composition in the setting of ceramic tiles comprising an aqueous emulsion of a synthetic polymer having incorporated therein between 10 and 40% by weight based on polymer solids of a silicone oil, a filler and a pigment.

2. A grouting preparation as claimed in claim 1, wherein the synthetic polymer is a vinyl or acrylic polymer or copolymer.

3. A grouting preparation as claimed in claim 1 or 2, wherein the silicone oil is a dimethyl silicone or dimethyl polysiloxane.

4. A grouting preparation as claimed in claim 1, 2 or 3, wherein the composition includes also minor additives selected from thickeners, fungicides and dispersing agents.

5. A grouting preparation as claimed in claim 1 and substantially as hereinbefore described with reference to any one of the Examples.

6. A method of preparing a grouting preparation for use in the improvement or repairing of existing grout lines between ceramic tiles or for use as a ready mixed grouting composition in the setting of ceramic tiles which comprises dispersing between 10 and 40% by weight based on polymer solids of a silicone oil in an aqueous emulsion of a synthetic polymer and then compounding said polymer/silicone oil dispersion with fillers, pigments and other customary additives for grout preparations.

7. A method as claimed in claim 6, wherein the silicone oil is dispersed in the aqueous emulsion of synthetic polymer with the assistance of a surfactant.

8. A method as claimed in claim 6 and substantially as hereinbefore described with reference to any one of the Examples.

9. A method of improving or repairing existing grout lines between ceramic tiles or

- 5 setting ceramic tiles which comprises applying to the tile assembly a preparation as claimed in claims 1 to 5, allowing the preparation to dry and then removing any preparation covering the tile faces by rubbing with a dry cloth.

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Printed for Her Majesty's Stationery Office, by the Courier Press, Leamington Spa, 1980
Published by The Patent Office, 25 Southampton Buildings, London, WC2A 1AY, from
which copies may be obtained.